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TITLE: Synthesis, Surface Properties, and Hydrolysis of Chemodegradable Anionic Surfactants: Diastereomerically Pure Sodium cis- and trans-2-n-Alkyl-1,3-dioxan-5-yl Sulfates

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AB A systematic study concerning the synthesis, adsorption, micellization, and hydrolytic decomposition of new, chemodegradable and diastereomerically pure sodium cis- and trans-2-n-alkyl-1,3-dioxan-5-yl sulfates (alkyl: n-C7H15, n-C9H19, and n-C11H23) has been undertaken. Surface parameters of the compds. under study at the aqueous solution/air interface, i.e., surface tension reduction, surface excess concentration, surface area demand per mol.,

and

standard free energy of adsorption and micellization, show differences both in the alkyl chain length and in the hydrophilic, i.e., sulfate, group configuration at the 1,3-dioxane ring. The cmc values are lower for the trans-isomers than for the cis-isomers, the ΔG°_{ads} and ΔG°_{cmc} values are lower for trans-isomers, and the effectiveness of surface tension reduction is higher for the cis-isomers than for the trans-isomers. The investigated compds. undergo an easy hydrolysis reaction of the acetal function, leading to starting aldehydes and sulfated glycerol. The trans-isomers are hydrolyzed much faster than cis-isomers, and no isomerization reaction of the type cis \rightarrow trans is observed during the hydrolysis process.

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RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent) (intermediate; synthesis, surface properties, and hydrolysis of chemodegradable sodium cis- and trans-2-n-alkyl-1,3-dioxan-5-yl sulfate anionic surfactants)

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CN 1,3-Dioxan-5-ol, 2-nonyl-, cis- (CA INDEX NAME)

Relative stereochemistry.

